Solution by DR. C. R. MacINNES, Princeton, N. J.

As Dr. Safford pointed out in discussing No. 132, the problem is equivalent to the following: Find n numbers such that when we add consecutive ones in every possible way, we get all the numbers from 0 to $n(n-1)$. Having any solution of the original problem, without loss of generality we may arrange the numbers in order of magnitude and so get n intervals which add up to $n(n-1)+1$, two of which will be 1 and 2. Such sets can be searched for systematically.

For $n=3$, there is only one set of intervals, 1, 2, 4.

For $n=4$, there are two sets, 1, 2, 6, 4, and 1, 3, 2, 7. But these are equivalent, since multiplying the second set by 2 reproduces the first.

For $n=5$, there is only one set, 1, 5, 2, 10, 3.

For $n=6$, there are five sets, 1, 3, 2, 7, 8, 10; 1, 3, 6, 2, 5, 14; 1, 2, 5, 4, 6, 13; 1, 7, 3, 2, 4, 14; and 1, 2, 7, 4, 12, 5. But these are equivalent, since, if we multiply the solutions corresponding to the first four by 4, 12, 23, and 28, respectively, and add 10, 14, 3, and 3, respectively, we get the last one.

For $n=7$, there is no solution.

For $n=8$, there are six sets of intervals, all of them equivalent to 1, 2, 10, 19, 4, 7, 9, 5.

The original problem, then, has no solution for $n=7$, a unique solution for other values of n up to 8.

n	*Solution.*
3	0, 1, 3.
4	0, 1, 3, 9.
5	0, 1, 6, 8, 18.
6	0, 1, 3, 10, 14, 26.
8	0, 1, 3, 13, 32, 36, 43, 52.

AVERAGE AND PROBABILITY.

179. Proposed by HENRY HEATON, Bellfield, N. D.

Through every point of the circumference of a given circle, chords are drawn in every possible direction. What is their average length?

No solution has been received.

180. Proposed by J. EDWARD SANDERS, Reinersville, Ohio.

There are n numbers in a box numbered from 1 to n. A number is drawn and replaced n times. Show that on the average the number of repeats is $\left(\frac{n-1}{n}\right)^n n$.

No solution has been received.